DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention

February 23, 2004

To: State and Territorial Epidemiologist
State and Territorial Public Health Laboratory Directors

Through: Director, Division of Bacterial and Mycotic Disease

Subject: Update on Surveillance for Outbreaks of *Salmonella* serotype Enteritidis (SE) Infections, 2002

Salmonella serotype Enteritidis (SE), most commonly transmitted through shell eggs, continues to be an important public health problem in the United States. In 2002, SE was the second most common *Salmonella* serotype reported to the Centers of Diseases Control and Prevention (CDC) through the Public Health Laboratory Information System (PHLIS), accounting for over 5,000 isolates. Twenty-nine outbreaks were reported in 2002, fewer than in recent years. Despite surveillance data indicating that SE incidence and outbreaks have decreased in recent years, outbreaks continue to occur.

In 1999, The President's Council on Food Safety developed an Egg Safety Action Plan calling for a 50% reduction in the number of egg-associated SE illnesses by 2005, with the ultimate goal of eliminating SE illnesses associated with eggs by 2010. Timely notification of outbreaks will help to attain this goal by allowing the U.S. Food and Drug Administration or your state Department of Agriculture to conduct rapid tracebacks to identify sources of contamination and prevent future outbreaks.

This document contains 1) the annual summary of outbreaks of SE reported to CDC from January 1 through December 31, 2002, 2) an outline of procedures for reporting outbreaks of SE to CDC and obtaining isolates for laboratory subtyping of SE, and 3) CDC guidelines for investigating possible egg-associated SE outbreaks. Please share this information with your personnel who conduct SE outbreak investigations. If the information in the table on outbreaks in your state is incomplete or inaccurate, please contact Nytzia E. Perez at CDC's Foodborne and Diarrheal Diseases Branch, telephone (404) 369-2206; fax (404) 639-2205; e-mail nperez@cdc.gov

We recognize that surveillance of SE infections and outbreaks represents a considerable effort on your part. We hope that you find the results helpful, and we look forward to working together toward controlling this important public health problem.

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FDA, ORA
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Summary of *Salmonella* serotype Enteritidis Outbreak Reported in 2002

In 2002, 29 outbreaks of *Salmonella* serotype Enteritidis (SE) were reported to the Centers for Disease Control and Prevention (CDC) from state and local health departments. These outbreaks resulted in 840 reported illnesses, 52 hospitalizations, and no deaths among residents of 23 states (Table). Compared with 2001, there were 17 fewer outbreaks, 50 fewer hospitalizations, and 841 fewer illnesses. The median number of cases per outbreak was 8 in 2002, compared with 10 in 2001.

A suspected food vehicle was identified for 17 (59%) of 29 outbreaks; 6 of these were confirmed by culture or statistical association. Eggs were an ingredient in 3 (50%) of 6 outbreaks with confirmed vehicles, which were homemade ice cream, eggs, and celery stuffing. In addition, eggs were an ingredient in two (18%) of 11 outbreaks in which the suspected food item was not confirmed.

Twenty (69%) of the 29 outbreaks occurred in commercial food establishments (e.g., restaurants, delicatessens, bakeries, caterers). Seven (24%) outbreaks took place in the general community (e.g., private homes, community centers, private clubs, churches), 1 (3%) occurred in a nursing home, and 1 (3%) occurred in an unidentified place.

Egg traceback investigations were conducted for 4 (80%) of 5 outbreaks in which a suspected or confirmed vehicle contained eggs. Two egg traceback investigations were conducted by state officials, and two were conducted by The Food and Drug Administration (FDA). One (25%) of the traceback investigations identified a single farm as the likely source of implicated eggs. SE was isolated from the environment. Information for the other traceback investigations was not available.

Phage typing was performed on patient isolates in 19 (66%) outbreaks. SE phage type 8 accounted for 8 (42%) of the outbreaks; most of these occurred in the Midwest or New England states. An egg-containing food vehicle was confirmed in 1 of the SE phage type 8 outbreaks. Phage type 13 caused 4 (21%) of SE outbreaks, and phage type 13a was responsible for 3 (16%) of SE outbreaks. Three uncommon phage types caused three outbreaks linked to beef (phage type 30) and unknown food items (phage types 22 and 23). Phage type 913, historically rare in the United States, has been linked to an outbreak caused by mung bean sprouts.

The number of SE outbreaks reported for the New England and Mid-Atlantic states decreased slightly from 12 in 2001 to 10 in 2002, a number considerably lower than the 42 outbreaks reported from that part of the country in 1992. The number of SE outbreaks reported in the Mountain and Pacific states decreased from 6 in 2001 to 4 in 2002. Although the proportion of confirmed vehicle and confirmed vehicle containing eggs outbreaks has decreased compared with previous years, eggs continue to be the most common vehicle identified. The reasons for the decrease are not known, but may include increased participation in egg quality assurance programs on farms, improvements in egg preparation practices, and food handler education. Communication among state health departments, CDC, and FDA is necessary to report the number of SE infections and outbreaks, and to assist in reducing SE infections.

Procedures for reporting SE outbreaks and obtaining isolates for laboratory subtyping

Procedures for reporting outbreaks of SE infections to CDC

CDC's Foodborne and Diarrheal Diseases Branch requests notification of SE outbreaks and outbreaks of group D *Salmonella* infections as soon as health departments become aware of them, regardless of whether or not a vehicle has been implicated, and regardless of whether or not eggs are the suspected vehicle.

Please contact the Foodborne and Diarrheal Diseases Branch at (404) 639-2206 to report any SE outbreaks, and send final reports of outbreak investigations to:

SE Outbreak Surveillance
Foodborne and Diarrheal Diseases Branch
Centers for Disease Control and Prevention
1600 Clifton Road, Mailstop A-38a
Atlanta, Georgia 30333
Tel: (404) 639-2206
Fax: (404) 639-2205
E-mail: ngp6@cdc.gov

Procedures for laboratory subtyping of SE isolates

Phage typing is a valuable tool for monitoring trends in SE infections, and therefore, we would like to determine the phage type of each reported outbreak. The CDC's Foodborne and Diarrheal Diseases Laboratory Section can provide subtyping support for outbreak investigations by determining the phage type of SE isolates. Subtyping by pulsed-field gel electrophoresis (PFGE) is also helpful; using both PFGE and phage typing can increase discrimination. If you have isolates from any SE outbreak in 2002 or other years that have not yet been sent to CDC, we would still like to receive them. Please send three clinical isolates from patients, and any outbreak-associated food isolates, accompanied by a DASH form for each isolate, to:

Cheryl Bopp
Centers for Disease Control and Prevention
Data & Specimen Handling Section (DASH)
Bldg 4. Room B35-G12
1600 Clifton Road
Atlanta, GA 30333
Telephone: (404) 639-1798

For each isolate submitted, **please indicate the outbreak with which it was associated** and whether it came from a patient, foodhandler, or food source. Please specify that the isolate is being submitted for *Salmonella* phage type determination.

CDC Guidelines for Investigating Possible Egg-Associated SE Outbreaks

Role of the FDA in SE outbreak investigations

Since October 1, 1995, FDA has administered an SE outbreak traceback program under authority of the Food, Drug, and Cosmetic Act. FDA assumed federal responsibility for SE tracebacks after the United States Department of Agriculture (USDA) activities, including tracebacks and on-farm testing, were suspended and funding for the USDA SE program was discontinued in October 1995.

When evidence indicates that contaminated eggs were the probable source of SE in a human outbreak, FDA will conduct microbiologic assessment of all production flocks that provided eggs at the time of the outbreak and will monitor diversion of shell eggs from SE-infected farms to pasteurization facilities. Early reporting of egg-associated SE outbreaks to the Foodborne and Diarrheal Diseases Branch is encouraged to facilitate coordination with FDA and increase the proportion of egg-associated outbreaks that result in egg traceback and flock testing.

To facilitate state and FDA tracebacks and poultry flock activities, CDC requests preliminary notification of SE outbreaks in which eggs are considered the implicated source, based on reliable epidemiologic information and/or statistically significant correlation between foods eaten and incidence of illness and/or SE isolation from remaining food samples.

To initiate a traceback, FDA requires a letter from the state that indicates any epidemiologic and environmental evidence of egg association in the outbreak.

Shell Egg Tracing

In an SE outbreak in which shell eggs are implicated, the following information should be collected to enable traceback of the eggs:

1. Whether cartons or cases in which the eggs used in the implicated food vehicle were still available at the time of the investigation. Whether any eggs were left in the container that held the suspected eggs.

2. Type and packing method of suspected eggs. (Note the source of each item mentioned, e.g., cartons or invoices)

   a. Size (extra-large, large, medium, small, jumbo)
   b. Color (white or brown)
   c. Pack type

   Bulk container (loose)--15- or 30-dozen case
   Consumer container--1 dozen, 18 egg, or 2½ dozen, Styrofoam

d. All identifying markings, if the container is available (this information may be available on the packing slip): Dates of pack, packer identification (plant number and state or federal [based on color of ink] packer), name and address of packer, grading line number or letter, sell-by date, expiration date, federal or state grade shield, and flock code.

e. Grade (AA, A, B, Not Graded)

3. Date(s) that eggs used or probably used in the implicated food vehicle were received at the outbreak location.

4. Source of eggs (including copies of all invoices, purchase receipts, and shipping and receiving documents); e.g., outbreak eggs were received directly from (name and address of distributor or processing plant that delivers eggs to the outbreak location).

   If the egg shipment(s) went through one or more "stops" (middlemen or points of transfer such as a food wholesaler or distributor) between the egg production farm of origin and outbreak site and/or consists of eggs from more than one egg production farm of origin, provide the identification of each.

A copy of the final investigation reports for egg-implicated and other SE outbreaks should be sent to CDC to maintain accurate data in the SE Surveillance System. Please send this information to:

SE Outbreak Surveillance
Foodborne and Diarrheal Diseases Branch
1600 Clifton Road, Mailstop A-38
Centers for Disease Control and Prevention
Atlanta, GA 30333
Tel: (404) 639-2206
Fax: (404) 639-2205
E-mail: ngp6@cdc.gov

Salmonella serotype Enteritidis outbreaks reported to CDC, by date of onset, January 1 – December 31, 2002 (as of 02/23/2003)

CDC ID #	Onset Month	State	City or County	Cases #	Hosp#	Deaths #	Exposure Location	Phage type	Suspected Vehicle	Vehicle Confirmed?[1]	Vehicle Contain Shell Eggs?	Egg Traceback Done[2]	SE Isolated From Farm?[3]
1	1	IL	Kankakee	22	2	0	Restaurant	13A	Unknown	N	-	-	-
2	1	IL	St. Clair	4	0	0	Restaurant	13	Unknown	-	-	-	-
3	1	ME	York	7	0	0	Community	913	Mung bean sprouts	Y	N	N	-
4	2	CT	Hartford	3	0	0	Nursing home	-	Unknown	-	-	-	-
5	2	MI	Malcom	2	8	0	Bakery	8	Cannoli (Pastry filling)	N	Y	-	-
6	3	ML[4]	Dallas	300	4	0	Hotel	8	Salsa	Y	N	-	-
7	4	MN	Dakota	2	0	0	Chinese buffet	-	Unknown	N	-	-	-
8	4	MN	Olmsted	5	2	0	Private home	-	Fried rice	-	-	-	-
9	4	WI	Milwakee	44	1	0	Restaurant	8	Chicken parmesan	Y	N	-	-
10	4	OR	Benton	2	0	0	Restaurant	-	Chicken	-		-	-
11	4	PA	Philadelphia	2	1	0	Restaurant	13	Mixed meat lasagna	-		-	-
12	5	MA	Hampshire	10	1	0	Restaurant	8	Unknown	N	N	-	-
13	5	IL	Lake	8	0	0	Private club	-	Unknown	-	-	-	-
14	6	PA	Lancaster	3	0	0	Restaurant	-	Chicken	-	-	-	-
15	6	NY	Monroe	47	7	0	Banquet facility	-	Multiple foods	-	-	-	-
16	6	NC	Robeson	23	4	0	Unknown	23	Unknown	-	-	-	-
17	7	WI	Washington	4	2	0	Restaurant	-	Unknown	-	-	-	-
18	7	MD	Wicomico	8	2	0	Restaurant	-	Unknown	-	-	-	-
19	7	MD	Baltimore	3	1	0	Restaurant	-	Unknown	-	-	-	-
20	7	PA	York	6	0	0	Seafood facility	8	Seafood	-	-	-	-
21	7	NY	Monroe	97	0	0	Golf club	-	Unknown	-	-	-	-
22	8	KY	Campbell	11	0	0	Church	13A	Homemade ice cream	Y	Y	Y:FDA	Y
23	8	NC	Wake	4	0	0	Restaurant	22	Unknown	-	-	-	-
24	8	IA	Cherokee	28	7	0	Restaurant	-	Potatoes, mashed w/gravy	-	-	-	-
25	9	VA	Richmond	32	2	0	Restaurant	13	Salad	N	N	-	-
26	11	OH	Putnam	27	4	0	Restaurant	13A	Celery stuffing	Y	Y	Y:Local	N/A
27	11	ID	Ada	14	2	0	Restaurant	8	Eggs, french toast	N	Y	Y:Local	N/A
28	12	WA	Multiple	32	0	0	Community	8	Eggs	Y	Y	Y:Local	N/A
29	12	CA	Merced	90	2	0	Private home	30	Beef	-	-	-	-
Total	**29**			**840**	**52**	**0**							

"-" indicates missing or unknown

[1] Based on reliable epidemiological information, statistical implication, or SE isolation from remaining food samples

[2] Indication of egg traceback: Traceback done by FDA - Y:FDA, done by State Agriculture Department - Y:Local

[3] N/A = not applicable

[4] Multistate outbreak involving TX, CT, ID, MI, WA, MN, AR, FL, SD, CA, and MA, onset in March related to salsa dish served during conferences held in a hotel, Dallas, TX